DRAFT

Socioeconomic Evaluation of the SDEIS Alternatives

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TABLE OF CONTENTS

INTRODUCTION

The context for the socioeconomic evaluation of the SDEIS alternatives is based on the current social and economic conditions in the interior Columbia River Basin as described in the Social (Burchfield and others 1997) and Economics Assessment (Haynes and Horne 1997) of the Component Assessment (Quigley and Arbelbide 1997). This evaluation of the SDEIS alternatives will focus on three component (economic, social, and environmental justice) evaluations as well as a composite evaluation. Much of it implicitly rests on concerns about "well being"[1]: a concept that was developed in various ways in the Assessment chapters.

Within a socioeconomic context, ecosystems are viewed as providing a wide variety of goods and services that enhance well-being and benefit a range of human wants and needs (see Haynes and others 1996). Federal natural resource policy is seen not only as providing a variety of economic opportunities, but also as maintaining our natural and cultural heritage. Some of these concerns have been expanded in the last five years by the growing interest in environmental justice (see Salazar 1996 and Weinberg 1998). These concerns have resulted in an Executive Order (E.O. 12898) that requires federal agencies to analyze the environmental effects, including human health, economic and social effects of their actions on minority communities and low income communities, addressing instances where the effects on these communities may be disproportionately high and adverse.

From the science perspective, an evolving concept is the notion of economic and social resiliency. Resiliency, in this sense, is defined as adaptability to change. Social or economic systems with high resiliency would be those capable of absorbing external shocks, such as a recession, and rebounding as demonstrated in terms of system indicators, such as total employment and per capita income. But resiliency involves more than just the economic structure of a community. It includes community leadership, activities like planning for the future, the presence and management of amenities (both within the town and nearby) which might attract people, and physical infrastructure (roads, sewers, water).

Changes since the First Evaluation

Community data base–Since the assessments were completed, Harris (1996) completed his assessment of rural communities in the inland Northwest. His data base plus additional community data was used by Reyna (1998) to describe the economic and social conditions of communities.

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[1] Social scientists use the concept of "well-being" as an organizing framework. Its usefulness is derived from the belief that a group of people can live in a "place", derive their livelihood in harmony with their surroundings, and make environmental decisions that address concerns for social justice and environmental protection. In our use, it combines social and economic measures of various processes described later in the component evaluations. It also depends on several evolving definitions of terms like community, stability, well-being, and resiliency.

This is a relatively extensive database on the communities located in the Basin including social assessments for 35 percent of them. These data suggest that communities are more complex than labels such as "timber dependent" would imply. Most communities have mixed economies and their vitality is often linked to factors other than commodity production. For the most part, communities specialized in agriculture are less resilient. Forest dependent communities, especially those with manufacturing facilities, are relatively more resilient ---in some sense they have experience in dealing with changes. Reyna's (1998) results suggest that isolation from trade centers is a greater factor in determining wood products specialized communities.

Issues– Since the Assessments and first evaluation were completed in 1996 and 1997, several social and economic issues have evolved significantly. Three social issues have evolved that reshape some aspects of the context for the SDEIS: western U.S. environmental values; concerns about communities, and the need to merge concerns about environmental protection and social justice. With regards to values the Assessments made use of mainly national surveys about values and attitudes. Comments on the draft EIS evaluation raised questions about the applicability of national environmental values as a barometer of environmental opinions in the American West. A recent summary of environmental opinion (Nie 1999) found western U.S. environmental opinions to be strongly and pervasively pro-environment. The implication is that the last several years have seen a continued shift in environmental values toward favoring wilderness protection, accepting economic tradeoffs for greater environmental protection, and support for compatibility of commodity production and environmental protection. The rural-urban dichotomy still exists but the difference is seen as one in which rural people favor local control in environmental debates. The issue of communities is a concern about their social and economic conditions and the role that government and nongovernment organizations play as agents of change in rural America. The third issue unites concerns about environmental policies with those of demography, ethnicity, poverty and income.

An important change for both the social and economic issues context is that population growth due to net inmigration has slowed dramatically since 1995. The population projections developed by McCool and Haynes (1996) were developed using assumptions based on the continuance of the current –early 1990's–rate of inmigration until the end of the decade. Those rates have changed dramatically in the last three years, with only about half the counties now showing net inmigration (see Troy 1999). These changes illustrate the complicated nature of population movements and suggest caution when extrapolating social and economic trends.

The economic issues that set some of the context for the SDEIS arose from dissatisfaction with descriptions of both economic structures and economic conditions within the Basin. There were two issues. First, the definition of an economy created confusion and second the approach used to measure the economic base of areas raised concerns. This latter issue was controversial. We reviewed alternative definitions of economic base (see Crone and others 1999) and found that different approaches are useful when they lead to a richer discussion about the propensity for change. But few differences were observed between approaches for grouping counties within the Basin. Some of the controversy was probably associated with the divergence between people's perceptions of the economic structure of their areas and what was actually revealed by factual descriptions (see Harris 1996).

In this evaluation data is summarized along the RAC/PAC definitions. While these regions make administrative sense, they confuse notions of functioning economies and dilute some of the discussion about economic base. But for the sake of comparisons, we do summarize in table EC-1 economic conditions for each RAC/PAC. While the Basin continues to enjoy robust economic growth, there is now greater concern regarding the need to strengthen rural communities.[2] Economic development is seen as critical to the survival of small communities in a productive and livable rural America. While farming (farm owners, tenants, rural farm-town families, and ranch families represent 19 percent of all households in the Basin) remains important as a source of jobs, rural areas depend on a variety of industries including services. Much of the contemporary rural development activity focuses on transforming low skill, low wage manufacturing toward more high-tech and flexible types of manufacturing. This effort builds on the trend of decoupling rural economies from traditional resource-extraction and associated manufacturing activities (Galston and Baehler 1995).

In the first evaluation, we said that of the uses of Federal lands in the Basin we could evaluate, recreation had the highest value followed by timber and then range. We also pointed out that many of the recreation and commodity uses took place in a complimentary fashion and did not necessarily involve tradeoffs. In terms of jobs, twelve percent of employment in the Basin was estimated to be attributable to recreation and Forest Service and BLM administered lands supply 80 percent of the recreation net economic benefit (Haynes and Horne 1997). Traditional natural resource jobs (mining, wood products manufacturing and ranching) accounted for 4 percent of employment in the Basin.

The recreation job estimates were challenged in the review. Based on further work[3], including new expenditure data, we now estimate that in 1994 there were 76,963 direct effect jobs associated with recreation activities on Federal lands in the Basin. This estimate is a little more than a third of the previous estimate and amounts to 4.44 percent of the total estimated jobs in the Basin in 1994. It is still slightly larger than the estimated percentage of jobs (3.52 percent) in ranching, mining, and lumber and wood products combined in the Basin. In total, about 8 percent of the jobs in the Basin are directly influenced by activities in federal land management.

National Forest Cut-- Another significant change has been the transition in federal harvest that has occurred in the past decade. As shown in figure EC-2, the harvest levels for the three Forest Service regions (considering only eastern Oregon and Washington for Region 6) has varied considerably over the past fifty years largely reflecting changes in societal expectations for timber harvest from Federal lands. The increase following World War II was the result of deliberate decisions to increase the harvest on the National Forests to meet the needs for housing just as the drop in harvest in the 1990's reflects changing expectations for increased habitat protection. Figure EC-2 shows that there has already been a

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[2]See the April 1999 Economic Development Digest for a discussion of the many facets of the issue.

[3] Crone, Lisa K., Haynes, Richard W. [in prep]. Revised estimates for direct effect recreation jobs in the interior Columbia River Basin. On file with: Interior Columbia River Basin Ecosystem Management Project, Walla Walla, WA. 99362.

downward adjustment in Federal harvest especially in eastern Oregon and Washington where the eastside screens and PACFISH standards and guides started reducing timber sales programs by 1993. The process has been slower to start in the upper basin but the same trend is evident there (see fig. EC-2). The important point is not to argue about the causes of the decline but to acknowledge that the process of community adjustments to reduced timber flows has already started and is fairly well advanced in eastern Oregon and Washington. These existing adjustments need to be considered with additional impacts to highlight the need to help communities with ongoing changes. We acknowledge the lengthy adjustment process associated with declines in Federal harvest flows. In the NWFP region, mill closures and community adjustments continued for as many as five years after the initial reductions in Federal harvest.

ECONOMIC EVALUATION OF THE ALTERNATIVES

This evaluation is composed of two sections, an evaluation of estimated economic activity and jobs at the Basin and RAC/PAC level and an evaluation of the effects of these activities on the counties they are most likely to impact. We consider the traditional measure of job impacts as a proxy for economic well-being.

In this evaluation we conduct analyses at three spatial scales: the nation, the study area (the interior Columbia River Basin), and RAC/PACs. In the last evaluation we used BEA functional economies and Ecological Reporting Units. We add a fourth spatial scale here--counties and in some cases communities--in order to identify more local impacts of the EIS alternatives. For reference, figure EC-1 is a map of the Basin showing the counties. This evaluation concentrates on results of the first decade of implementation (1999-2008) because it is the standard time frame for evaluating EIS alternatives and we have greater confidence in our projections than for longer time spans.

Tables EC-2 to EC-6 show selected annual average activity levels within the assessment region for timber, authorized AUMs, forest and range management and restoration activities, and fire management activities by RAC/PAC. The methods used to develop these measures are documented elsewhere in the Landscape Evaluation of the Alternatives. The amount of range livestock allotment maintenance/restoration is shown two ways. In table EC-5A it is shown by acres while in EC-5B it is shown in terms of costs. These costs were computed using an average of $ 0.10 per acre in both the current situation and first alternative and $ 0.23 per acre for alternatives 2 and 3. The costs were based on estimates provided by the landscape staff[4].

The timber numbers need some additional explanation. First, these are estimates of cut, which is a

[4] Range restoration costs were estimated as $0.10 per acre currently, $0.40 per acre in integrated subbasins, and $ 0.15 per acre in non integrated subbasins. The figure $0.23 represents a simple average of these last two figures.

function of the timber sale program--the extent that offered sales have been sold. Second, the character of the timber available from National Forests is changing. For example, the diameter of the timber to be harvested is expected to be roughly nine inches in diameter and the proportion of non sawtimber and less desirable species is increasing (see the discussion in the last evaluation). This raises questions about the likelihood that some timber sales will be successful.

Economic Activity

Two sets of effects tables are shown. Tables EC-2 through EC-11 and EC-31 present the activity levels and employment associated with changes within the part of the interior Columbia Basin Ecosystem Management Project effected by the management decision. The second set is shown in Appendix EC-1 (tables EC-20 through EC-30) and includes changes on Federal lands throughout the Basin. As such they include outputs from the NWFP area that is in the interior basin as well as small levels of activities. These latter tables help set context for the changes expected to result from these management actions.

Overall, the effects of the three EIS alternatives on the regional economies of the Basin are subtle. In the first decade the alternatives would affect approximately 0.1 percent of all jobs in the Basin, or 2.0 percent of those based on Forest Service- and BLM-administered lands. However, larger and more numerous differences might be observable over several decades depending on which alternative is chosen. The question of the impacts on economic activity can be divided into two parts: estimated direct job impacts by RAC/PAC and estimates of effects on selected counties where impacts are most likely to be felt.

Direct Jobs--The estimated job numbers are shown in tables EC-7 to EC-11. The convention is to use these to illustrate the positive or negative economic impacts of various land management actions. These job numbers illustrate real differences between the alternatives especially in the first decade where increased restoration and fuel management activities effectively create jobs within the Basin. The differences between alternatives S2 and S3 reflect a deliberate attempt in S3 to focus these activities in subbasins of greater socioeconomic need.

The alternatives have little effect on the estimated total number of jobs supported by resources from BLM- and Forest Service-administered lands. In 1990 there were an estimated 1.5 million jobs in the Basin. These were expected to increase by 110,000 during the 1990s (Haynes and Horne 1997). Of the 1.5 million jobs, Forest Service- and BLM-administered lands were estimated to support roughly 95,000 jobs or 6.3 percent of the total jobs. Of these 95,000 jobs 81 percent were estimated to be direct effect recreation jobs (this includes a small amount of other federal land, see Crone and Haynes, in press), 9 percent were estimated to be in timber, and 2 percent were estimated to be in range. The remaining 8 percent were in various forestry services. The number of estimated jobs associated with alternaitve 1 are roughly the same as the current number of jobs. The main effect of alternatives S2 and S3 is to increase the number of jobs in the next decade by roughly 12 percent in the wood products and forestry services sectors while slightly reducing the number of range jobs.

There are cautions about the job numbers especially those in the forestry services (SIC [Standard

Industrial Classification] 08) category. First, while the job estimates are for full time equivalent jobs many of these are by their nature seasonal jobs. The implication is that they impact more people than just the job numbers but that the income associated with them is shared across multiple individuals. Second, the focus on employment as a proxy for economic well-being does not recognize the potential differences in income between different types of jobs. Often timber jobs are thought to have a more positive impact on local economies than recreation jobs because they have higher wage rates.

Finally, the approach taken here is often criticized as static such it assumes no change in the economy other than that affected by the EIS alternatives. Critics contend that economies are dynamic and interactions at regional, national, and international scales may overwhelm or offset any impact of Forest Service and BLM decisions. Because of these concerns, we are more concerned about the impact of Forest Service and BLM decisions on the ability of an economy to adapt to change.

Range jobs--Range jobs were calculated by multiplying the number of animal unit months (AUMs) under each alternative by the number of jobs per AUM. The number of AUMs for each alternative are shown in table EC-3. The number of jobs per AUM was calculated to be .00036 jobs per AUM (see table EC-8). This response coefficient includes an adjustment to account for the seasonal pattern of federal allotments (see Haynes and others 1997 for details). The alternatives have relatively small impacts on ranching jobs over the next decade because Forest Service- and BLM-administered lands provide only 7 percent of the forage for cattle and sheep in the Basin. Small reductions from current levels are expected, even with no change in policy (alternative 1), reflecting recent unrelated changes in management. Both alternatives 2 and 3 reduce ranching jobs by roughly 100 jobs, but increase range restoration jobs by roughly 12 jobs.

Recreation jobs--Recreation jobs are assumed to remain constant for each of the alternatives. We made this assumption because the various projections of the distribution of ROS acres (other than for a small shift in Alternative 1) remains the same in all alternatives. Crone and Haynes (see footnote 3) discuss the development of the revised estimates of recreation jobs based on revisions in the recreation response coefficients, or number of jobs per visit, for each of 12 recreation activities.

There are several caveats and concerns associated with the recreation estimates. First, given that recreation and unroaded areas are highly valuable uses and conditions of Forest Service- and BLM-administered lands in the Basin (see Haynes and Horne 1997), if the chosen alternative is perceived as a threat to recreation opportunities and/or unroaded areas provided by these lands, negative public opinion may inhibit changes to current land management practices. There are also concerns about the absolute magnitude of recreation jobs. The first concern is that we believe that more acres will shift from roaded natural to primitive/semi-primitive settings than shown here. These numbers were derived by assuming no decrease in roaded natural settings from current conditions under the alternatives. Yet National Forests are currently implementing policies to close roads and there are additional concerns about maintaining the existing road network given limited budgets. However, the supply of roaded natural opportunities exceeds the demand for such opportunities in most places. Another concern is that

although there is an ongoing effort to improve the methods used to collect recreation use data[5] there was no way to derive a level of confidence for the accuracy of the reported recreation use data (see footnote 3). Finally, the same caveat with respect to the seasonality of forestry services jobs applies to many recreation jobs.

Timber jobs – There are two components of forestry jobs. First, is employment in the lumber and wood products industries (SIC 24) which is generally used as the estimate of employment impacts. Second is employment in various forestry services (SIC 08) such as tree planting, precommercial thinning, fuel management, etc. The job effects in these two sectors are shown in tables EC-7, 9 and 10. The effects on jobs in the lumber and wood products industry over the next decade vary between alternative 1 and alternatives 2 and 3. Both of the latter alternatives increase harvest above recent levels due to the increased restoration activities embedded in them. There are subtle differences in the distribution of jobs among RAC/PACs between alternatives 2 and 3. What is important is the distribution of the gain in jobs between these two alternatives and alternative 1. The greatest gains among RAC/PACs are in those with substantial timber resources such as RAC/PAC 8. A key point, however, is that at least in the next decade the alternatives maintain recent job numbers or support a slight expansion depending on the extent of restoration activities.

Direct lumber and wood products jobs were calculated using the same approach we used in FEMAT (1993): by multiplying the estimates of timber harvest by the number of jobs (7.75) per million board feet. We assumed no offsetting increases in harvests from non Federal lands. Initial estimates of the average annual timber harvest summed to RAC/PACs was projected for the first and tenth decade using the CRBSUM model calibrated to current harvest levels. The direct employment response multiplier, or number of jobs per thousand board feet, was determined by dividing current employment in the wood and forest products industry (SIC 24) by current timber harvest. As in FEMAT, we assumed no job changes for the pulp and paper industry (SIC 26) because this sector would not be directly affected by changes in timber volumes harvested from Forest Service- and BLM-administered lands. This is not to suggest that there will not be impacts on the pulp and paper industry, only to suggest that the industry will respond to supply induced changes in ways different from the solid wood products sector.

To put these timber job impacts in perspective, note that the variability among alternatives is within the range of recent change. Jobs attributable to total timber harvest and that from Forest Service- and BLM-administered land is shown in the following tabulation:

	Eastern OR and WA			ID and MT	
	total	Federal		total	Federal
			thousands		
1982	16.5	7.4		18.2	5.7
1986	20.5	12.1		21.2	7.8
1990	23.1	11.3		21.8	7.7
1993	21.2	7.5		21.0	5.6

[5] See Kocis, Susan. 1999. National Recreation Use Pilot Study results, analysis, and recommendations. Final Report. USDA Forest Service. On file with: Interior Columbia Basin Management Project, Walla Walla, WA 99362.

For several reasons, we are not sure that the timber harvest levels estimated for the EIS alternatives will actually be realized. First, some of the area projected by CRBSUM for harvest would be harvested using helicopter logging systems, but at recent (Spring, 1999) prices and harvesting costs the timber in these areas would not likely be sold. This volume, estimated as part of the draft EIS evaluation could amount to between 9 and 15 percent of the potential sale volume. A second reason some of this timber may not be sold is because of low average harvest diameters. Again this was examined in the draft EIS evaluation by subtracting precommercial thinnings from total harvest (because these trees are not taken to mills) and calculating the diameter at breast height (DBH) of the remainder. The resulting average harvest diameters (in inches) for the old alternative 4 was 9.2 inches. Given these diameters, many sales will not meet current standards for economic viability in which sales must have at least 33 percent of their volume[6] in sawtimber (11 inches DBH or greater), either green or recently dead. Commercial viability of salvage sales is even more questionable because the value of dead sawtimber drops rapidly, especially for pines. Trees with diameters less than 8 inches are likely to sell only during periods with high chip prices (such as in 1994 and early 1995).

The jobs in forestry services (including range restoration) are shown in tables EC-9 and EC-10. The number of forestry workers (SIC 08) required for the precommercial thinning and fuel management assumed in the CRBSUM runs was estimated using 1 job per 500 acres treated.[7] Range restoration jobs were also calculated based on 1 job per $43,125 of expenditures. Employment for forestry services including thinning and restoration is shown in table EC-9[8]. Because of the increased restoration in alternatives 2 and 3 employment increases an average of 6 percent in these alternatives relative to alternative 1. Table EC-10 shows the jobs in fuel management with a large increase in the first decade for alternatives 2 and 3. Table EC-9 also includes jobs in range restoration. In alternative 1 this accounts for 2 percent of the forestry services jobs while in alternatives 2 and 3 this accounts for 4 percent of the jobs. Table EC-11 shows total employment for wood products, range, and forestry services. In those RAC/PACs where fuel management is a major issue (in western Montana and eastern Oregon) there is a nearly 10 fold increase in both acres treated (table EC-6) and jobs.

The increase in fuel treatment also raises the question of possible additional (beyond planned timber

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[6] See Haynes 1999 for a more complete discussion of the relationship between chip and sawtimber prices. Some of these same issues were discussed in the Economic Assessment.

[7] Thinning and fuel treatment costs are assumed (based on FY99 average costs per acre from Region 6) to be an average of $86 dollars per acre. If we assume that labor costs are on the average 80 percent of the total costs and that fringe benefits cost employers 15 percent per employee than there is one job (full time equivalent) per 500 acres treated.

[8] Appendix EC-1 table EC-31gives the number of harvested acres. By subtracting these acres from those shown in table EC-4 we can determine the extent of "jobs-in-the-woods" types of activities for the Interior Columbia Basin Ecosystem Management Project Management Region where those activities typically involve stand treatments other than planting. For the entire basin subtract the acres in table EC-22 from acres in table EC-30 .

sales) timber for local processing industries[9]. We estimated that the following volumes might be available each year during the first decade:

	Sawtimber	Non sawtimber
	(Million board feet)	
Alternative 1	32	22
Alternative 2	261	182
Alternative 3	202	140

The nonsawtimber volumes (less than 11 inches in diameter, dead trees, etc) offer utilization opportunities for products such fuelwood, posts, and poles. The sawtimber volumes can be utilized for forest products such as lumber and if completely utilized would offer increased employment of 108 jobs, 876 jobs, and 677 jobs for alternatives 1, 2, and 3 respectively.

A final caution, is that managers should not assume that rising stumpage prices will increase revenues sufficiently to cover the costs of management actions such as precommerical thinning. We do not expect the rapid stumpage price increases of the early 1990s to continue. Rather, for the next few years prices are expected to increase by 1 to 2 percent per year (in real terms) (Haynes and others 1995). The inference is that the recent (since 1996) difficulty the Forest Service and BLM have had selling timber sales will continue to impact agency revenues that are tied to timber harvest.

Stumpage prices have risen sharply during 1986-1998 as Forest Service timber sales dropped in the early 1990s. Prices in eastern Oregon and Washington, for example, rose from $88 per thousand board feet in 1986 to a high of $277 in 1993 as National Forest sale levels dropped. Current prices have fallen roughly back to the 1986 levels due to reduced demand resulting from both market conditions and reductions in processing capacity. These stumpage prices have wide applicability[10] as representing trends across all ownerships. In that sense the volatility in prices over the past decade has changed owner expectations, stewardship objectives, and wealth positions.

[9] If we assume that fuel treatments result in 33 percent of stand volumes being cut and that the distribution of age classes of treated acres are 20 percent non stocked, 35 percent 0 to 40 years, 35 percent 41-100 years and 10 percent 100 years plus, then we can expect available volumes of 263 board feet per acre for the pine types and 384 board feet for the Douglas-fir types.

[10] Market arbitrage insures uniformity of price signals at a given point in time across ownerships and spatial differences in markets (see Haynes 1998 for examples).

Stumpage prices for timber sold from National Forests
Dollars per thousand board feet

	Region 1	Region 4	R6 Eastern Oregon and Washington
1986	28.23	23.74	87.64
1987	41.2	36.19	119.09
1988	47.23	57.68	136.85
1989	93.45	59.73	161.75
1990	111.23	69.75	144.07
1991	102.64	80.11	140.74
1992	149.51	123.13	177.27
1993	280.22	248.01	277.15
1994	244.82	230.84	136.6
1995	149.05	121.28	108.43
1996	127.5	61.34	86.11
1997	158.65	126.83	75.26
1998	121.97	113.76	70.42

Counties of Concern

In this section, we begin by using simple rule sets to identify counties which may be the most affected by changes in Forest Service/BLM harvest and grazing levels. To identify wood products counties of concern, we included counties that had at least ten percent of their employment in SIC 24 in 1995 and/or contained two or more communities with medium to very high wood products specialization ratings as defined in Reyna (1998). To identify range counties of concern, we used the range reliance calculation from Horne and Haynes (1999) and included counties in which 12 percent or more of agricultural sales in the county were derived from cattle or sheep produced from federal forage. The wood products and range counties of concern are shown in tables EC-12 and EC-13 respectively.

To examine the effects of estimated harvest and AUM levels (by alternative) on the counties of concern, harvest volumes and AUMs were allocated from management units to counties according to acreage percentages. Tables EC-12 and EC-13 show the rankings of the alternatives for each of the wood products and range counties of concern, for both the first and tenth decades. These rankings are based on the estimated harvest and AUM levels for each county. For example, the rankings for Adams, Idaho in the first row of table EC-12, mean that alternative 2 has the largest estimated harvest for Adams county in both the first decade and the tenth decade. Similarly, the first row of table EC-13, illustrates that Adams, Idaho is estimated to have the largest amount of Forest Service/BLM forage under alternative 1 in the first decade and under alternative 2 in the tenth decade.

Summing the rankings for the wood products counties of concern as a group, alternative 3 is estimated to be preferred in the short run (first decade), followed by alternatives 2 and 1 in that order. In the tenth decade, alternative 2 is estimated to be best, followed by alternatives 1 and 3 in that order. For the range

counties of concern as a group, alternative 1 is preferred, with alternative 2 slightly better than alternative 3 in the first decade. In the tenth decade, alternative 2 has the highest total ranking, followed by alternatives 3 and 1, respectively.

SOCIAL EVALUATION

The social evaluation of alternatives focuses on several issues raised in the first evaluation and in the subsequent review. These issues include concerns about social and economic conditions in the communities of the Basin; concerns about using amenity levels to discuss quality of life; concerns about smoke management; the effects of the alternatives on the Tribes and barriers to implementation.

Community Effects

Since the original Assessments and Evaluations there has been great public interest in trying to better understand the impacts of the alternatives in the SDEIS on the economic and social conditions of communities in the Basin. The dilemma we face is that any such evaluation is limited by the degree to which specific effects on individual communities can be projected given the broad-scale nature and associated direction of the SDEISs. However, here and in other parts of this evaluation we do identify specific areas for analysis based in part on underlying community attributes of these areas.

Reyna (1998) identified 179 isolated communities in the Basin. Table EC-14 lists counties which contain two or more isolated communities that have medium to very high wood products specialization and for which at least 33 percent of the land in a 20-mile radius circle of the community is Forest Service/BLM managed land[11]. Table EC-15 lists counties that contain two or more isolated communities that have medium to very high agricultural specialization ratings and which meet the 33 percent Forest Service/BLM managed land criteria just discussed. Evaluating the alternatives relative to those counties and communities we find that, in the short run, alternative 1 favors the agricultural communities while alternative 3 favors counties with wood products specialized communities.

Effects of the Alternatives on Tribes

The current Alternatives go far in addressing Tribal issues[12]. The Tribal Working Group established to address treaty/trust issues and the recognition of those issues in the alternatives continues the process to develop collaborative efforts with the Tribes based on trust. Each of the alternatives address Tribal issues such as culturally important terrestrial wildlife, tribal fisheries, integrity of cultural landscapes and

[11] See Reyna (1998) for details on how the specialization ratings were determined and for the definition of community isolation.

[12] See the draft paper "Evaluation of ICBEMP SDEIS Alternatives on Tribal Rights and Interests" by Richard Hanes. On file with: Interior Columbia River Basin Ecosystem Management Project, Walla Walla, WA. 99362.

places, and culturally important plants. Other issues such as community (where the discussion deals with community of place) and economic conditions as described in Chapter 3 are addressed somewhat differently between alternatives.

Following the last Evaluation the issue of Tribal communities emerged as part of the general increased concern about social and economic conditions of communities. Reyna (1998) identified 65 communities associated with American Indian reservations. These were selected primarily because of their proximity to reservations. These communities vary greatly in their relationship and reliance on federal lands. We used those tribal communities which had medium to very high specialization ratings in agriculture and wood products to identify counties of concern and to evaluate the alternatives (see tables EC-16 and EC-17). In the first decade, alternative 1 provides the greatest benefit to those counties with specialized agricultural communities while for the wood products communities alternative 3 provides greater benefits. These rankings shift in the longer-term as shown in the tables. Part of the difference between the effects for wood products and agricultural communities lies in the different sizes of the ranching and wood products industries where the latter is of greater economic significance.

Another aspect of potential impacts is the effect of the various alternatives on prices of timber. Since some tribes are significant landowners changes in timber prices directly translates to changes in timber reserves and timberland wealth. In this case Alternatives 2 and 3 have a negative impact on timber values. In general each increase of 100 million board feet of Federal harvest reduces stumpage prices 25 percent for private landowners[13].

While difficult to be specific, but both alternatives 2 and 3 with their emphasis on restoration offer employment opportunities to tribal members and other disadvantaged groups. Alternative 3 with its greater focus on economically vulnerable communities has unique advantages in this regard. Some of this will be further discussed in the section on Environmental Justice.

Potential Barriers to Implementing Ecosystem Management

The Social Assessment and first Social Evaluation stressed the need to overcome potential barriers to implementation. The substantive issues were institutional barriers, concerns about the nature and extent of public participation, Tribal issues, and concerns about the means to develop effective collaboration. As discussed in the previous section the current Alternatives go far in addressing Tribal issues. Various efforts have been made to formalize the process of collaboration with elected governments. Both Alternatives 2 and 3 will rely on local governments to facilitate implementation to a greater extent than in Alternative 1.

One significant change in these alternatives is the recognition of an explicit economic strategy that attempts (especially alterative 3) to promote the economic participation of the local workforce in management activities, and to emphasize activities in nearby rural communities or geographic areas that are less economically diverse and more dependent on the outputs of goods and services from Forest

[13] This assumes the estimated derived demand function of q = 580 - .607 p where q is in million of cubic feet and p is the real stumpage (cut) price for eastern Oregon and Washington.

Service/BLM administered lands. As discussed in previous sections this is evident in the discussions of the differences between alternative 2 and 3. One of the differences between the two alternatives is that alternative 3 trades off the quantity of total treated area for the selection of specific locations for the treatments to occur. The outcome in our evaluation is that alternative 3 has positive social benefits relative to alternatives 1 and 2. This is especially true for those areas thought to be reliant on Federal timber. However, neither alternative 2 nor 3 do much to support the difficult transitions in the areas reliant on federal forage. Both alternatives 2 and 3 with their heavy focus on restoration activities relative to alterative 1 will create employment opportunities that can help sustain rural lifestyles and communities. The challenge will be to work in concert with local governments, agencies, and tribal communities to take advantage of the opportunities to focus activities near Tribal and other selected communities.

Smoke/Fire

Since the first evaluation greater concern has been expressed about the role of smoke management as an integral part of the increased use of prescribed fire in some of the Alternatives. At the broad scale, there is little difference in public perceptions between smoke from a natural fire and smoke from a prescribed fire. At the fine and mid scale, the use of prescribed fire is often opposed because of local concerns about human health issues and visibility impacts. Both of these types of concerns are further complicated by regulatory issues. In order to garner public acceptance for greater use of prescribed fire (as in Alternatives 2 and 3) efforts will need to be made to manage smoke so that it does not result in public controversy.

Institutional Barriers

The Social Assessment and to a lesser extent the original social evaluation stressed the importance of overcoming institutional barriers to implementation. These include political, bureaucratic, legal and social barriers. Until the Forest Service and BLM have gained public acceptance, the Congressional approval, legal authority and budgetary flexibility to implement ecosystem management on the ground, the desired future conditions of alternatives 2 and 3 will be difficult to achieve. Public acceptance is the key to overcoming the political and legal barriers necessary for implementing ecosystem management. A less well acknowledged barrier to implementation is the current downsizing of land management agencies. This raises concerns both about the institutional capacity of the Forest Service and BLM to implement ecosystem management on the ground and the potential reductions in the number of federal employees and the associated impacts on the communities where they live.

Sense of Place

The social assessment identified place attachment and identity as important concepts. Certainly, the communities of the interior Columbia Basin have unique identities; for many of these communities, their identity is directly linked to surrounding land uses (e.g. “ranching community”, “timber town’, “mill town”). It is difficult to assess what types of effects changes in land management policies will have on these community identities and how changes affect resident and non-resident perceptions of the community. For example, how will restoration activities on the landscape affect the particular

attachments to those landscapes by the people who value them? If the use of large amounts of public lands is changed, as suggested in the second and third alternatives, there are likely to be changes in both how people see themselves in reference to the landscape and how they perceive their lifestyles and quality of life. The exact nature of these effects are difficult to predict.

ENVIRONMENTAL JUSTICE

Environmental justice as it relates to land management issues is described by Salazar (1996) as a melding of concerns for environmental protection, democracy, and social justice. Social justice issues include fair procedures to allocate natural resources, fair distribution of the benefits and costs of resource management and equal access to public resources. Salazar believes an important tenet of the environmental justice movement is the notion that environmental issues must be considered within their political economic context, that status and power are key determinants of the quality of a person's environment, and that a person's status and power are influenced by their social class and skin color. Hunter (1997) adds language as an additional determinant of status and power. Brown (1995) describes an environmental justice concern in southern Oregon that is common to many areas of the Basin. He observed that land use planning, combined with declining employment in the wood products sector and the influx of wealthy urbanites to forested areas, resulted in the displacement of rural, working people from high amenity areas. Traditionally, these areas provided not only jobs but low-cost housing; access to berries, firewood and game; and a setting for the development of community. He believes that issues related to the loss of public space and denial of access to historically common resources usually is not adequately addressed in Federal planning activities.

To evaluate the alternatives in terms of environmental justice as it relates to low income populations, we use the wood products and range counties of concern listed above as the counties that may be the most impacted by Forest Service/BLM land management activities. We then examine this set of counties in terms of three economic variables: average unemployment rate (1970-1997), average per capita income index (1970-1997), and estimated basin poverty ranking (1995) (the county with the lowest ranking (1) has the highest poverty rate). Counties from the lists of counties of concern with an average unemployment rate of 10 percent or more, an average per capita income index of .85 or less, and a basin poverty ranking of 20 or less are shown in table EC-18. Seven of these counties are on the wood products counties of concern list, one of which (Ferry, Washington) is also on the range counties of concern list. In the short run (first decade) Alternative 3 has a better outcome for the low income environmental justice wood products counties of concern as a group, followed by Alternative 2 and Alternative 1 in that order. In the long term (tenth decade) Alternative 1 is slightly better than Alternative 2, and Alternative 3 is the worst for this group of counties. For Ferry, Washington the range outcomes are the same as for the range counties of concern as a whole, where in the first decade Alternative 1 is best, followed by Alternative 2 and Alternative 3, while Alternative 2 is best in the tenth decade followed by Alternative 1 and Alternative 3.

An additional environmental justice issue is the impact road closures may have on access to areas used by low income populations to meet subsistence needs. Activities such as hunting, fishing, berry and mushroom picking, and wood cutting could be affected. Fuel wood, for example, to heat homes in the winter is critical to people of limited means, and the consequences of road closures may have a

disproportionate effect on people that depend on firewood. Road densities are predicted to be lower in Alternative 2, then Alternative 3 with the highest road densities associated with Alternative 1. Thus road closures are likely to be highest in Alternative 2, followed by Alternatives 3 and 1.

Examining environmental justice from an ethnic minority standpoint as it relates to the SDEIS is more difficult. In order to discuss the effect of Forest Service/BLM land management activities on ethnic minorities, we need to need to know both where they live and how they use the land. Hanes and Hansis[14] (1995) provide a good overview of the geographic location, and use and relationship to public lands of the various American Indian Nations in the interior Columbia basin. Given the diversity of these tribes, the variety in their uses of the land and the multidimensional aspects of their relationship to the land we make no attempt to summarize this information here but instead refer the reader to the original document. The following description for other ethnic groups in the basin is taken almost directly from the same document.

The Hispanic population is concentrated in seven river basins, with the largest number living in the Yakima Valley from Ellensburg to the Tri-Cities in Washington, smaller but significant concentrations living along the Snake River in Idaho, Oregon and Washington and in the Wenatchee, Washington areas, and smaller numbers living in the Deschutes and Klamath basins in Oregon. Other ethnic minorities are relatively evenly spread throughout the basin. A few concentrations of Japanese-Americans, who are the largest contingent of Asians, have resulted from the internment camps of World War II. The large number of Southeast Asian users come from the large urban areas west of the Cascades. The African-American population is small and does not use public lands even in proportion to its small numbers.

Hispanics, originally drawn to the interior Columbia basin by jobs in irrigated agriculture, have begun to use lands, especially national forests, both for income and recreation. As more and more first and second generation Hispanics work outside of agriculture, their use of public lands for recreation has increased and is predicted to continue to increase. Some of this recreation involves large family outings to nearby parks, while increasing numbers of Hispanics hunt, fish and camp on public lands. The proportion of Hispanic recreational users is still well below their proportion of the population.

Public lands are also utilized by large numbers of Hispanics who earn income in forestry related activities. They are employed by labor contractors to reforest, prune and thin trees and have been employed as fire fighters to a lesser extent. Hispanics have also been involved in the harvest of special forest products, such as huckleberries, mushrooms and beargrass.

Southeast Asians, although a very small minority of the residents of the interior Columbia basin, also use public lands for the harvesting of special forest products. Many come from the west side of the Cascades to pick mushrooms and harvest beargrass. The harvesting of some of these crops
may provide a backdrop for family and social cohesion. In some cases, whole families go to public

[14] Hanes, Richard C.; Hansis, Richard. 1995. Interactions of American Indian Nations and Ethnic Groups with the Natural Environment. On file with : Interior Columbia Basin Management Project, Walla Walla, WA 99362.

lands, camp, pick beargrass and mushrooms, and socialize in extended kin networks (Richards 1994).

The evaluation of the alternatives for effects on counties with Indian communities which are specialized in wood products and agriculture was included in the Social Evaluation above. Evaluating the alternatives in terms of their effects on other tribal uses and relationships to the land will not be attempted here. This is because we cannot quantify what effect the alternatives will have on the specific populations of plants and animals species or geographical sites that are of economic, cultural or spiritual significance to each of the American Indian populations, since this is a broad-scale plan while those are fine-scale effects. A process has been set up that requires formal consultation with the tribes regarding management activities that could effect them at the fine-scale. This consultation process is required in each of the alternatives. Both alternatives 2 and 3 have an objective of promoting the economic participation of the local workforce in the management activities on Forest Service/BLM lands near reservations which have the opportunity to provide for the rights and interests of tribes. In Alternative 3 the highest priority is placed on management activities in subbasins that are near or contain reservations and that have the opportunity to provide for the rights and interests of tribes. However, since the highest amount of restoration activity takes place under alternative 2 we cannot determine whether Alternative 2 or 3 is preferred in terms of tribal employment opportunities associated with restoration activities.

As with the general population, effects on recreational use of Forest Service/BLM lands by Hispanics cannot be evaluated. The many Hispanics who are employed in forestry related activities, will be better off with Alternative 2 since this alternative has the highest amount of restoration activity. The degree to which Hispanics who travel to and around the Basin to work in these activities may be displaced by local workers in areas where the employment of local workers is to be emphasized is unknown.

Southeast Asians and Hispanics who harvest special forest products may be better off under Alternative 1, then Alternatives 2 and 3. As in the case of low income subsistence forest users, this ranking arises because lower road densities will in some cases mean road closures which will probably make it harder to access at least some special forest products harvesting sites. Because these ethnic groups make up a large proportion of the special forest products industry, this is an area where the higher road closures associated with Alternatives 2 and 3 could have a disproportionate impact on these minorities.

As is the case for American Indians there are many sites in the Basin that have special significance to various ethnic groups for historic, cultural, symbolic or other reasons. Before ecosystem management implementation actions are taken in areas containing such sites, efforts must be taken to ensure that the ethnic groups with attachments to these sites are informed and involved in decisions regarding mitigation efforts to maintain the integrity of these sites.

COMPOSITE SOCIOECONOMIC RESILIENCY

There is a broad concern about the effects of changes in Federal land management on measures of socioeconomic resiliency (see Horne and Haynes [1999] for a description). There are two questions of concern. First, do the various alternatives change our notions of the socioeconomic conditions of the

basin? Second, are there areas where the human populations might face difficult transitions due to changes in Federal land management?

Effects

In general, the economic resiliency of the Basin is high relative to other parts of the United States, although it varies by county due in part to the size of the area and diversity of existing biophysical conditions. Generally, most of the people in the Basin (82 percent) live in counties that are medium or high in terms of adaptability, as measured by economic resiliency. However, most of the land area in the Basin (68 percent) is in the low category.

We used the following rule set to identify those counties in which Forest Service and BLM decisions resulting from the ICBEMP may affect socioeconomic resiliency. The first set of counties are those from the wood products counties of concern list above which have socioeconomic resiliency ratings of 1 (low). There are 21 such counties. They typically have higher than average unemployment and slightly declining per capita income relative to the Basin average. The second set of counties are the recreation counties of the Basin as identified by Johnson and Beale (1995) which have a low socioeconomic resiliency rating. The third set of counties are the range counties of concern identified above (each of these counties also had a low socioeconomic resiliency rating).

Using these rules, we identified 28 counties whose socioeconomic resiliency might be affected by the EIS alternatives (table EC-19). Several counties show up in more than one list. For example, four of the range reliant counties (Valley, Lemhi, Custer, and Camas, Idaho) are also recreation counties. Six counties are both wood products and range counties (Adams, Idaho; Grant, Harney, Lake, and Wallowa, Oregon; and Ferry, Washington) and three counties are both wood products and recreation counties (Benewah and Teton, Idaho; and Okanogan, Washington).

The impacts of the EIS alternatives vary depending on the number and type of sectors affected (see figure EC-3). To estimate the effects of the EIS alternatives, we used the population-weighted measure of socioeconomic resiliency developed for each county because socioeconomic resiliency varied directly with population levels and demographic attributes. In relative terms, if we assign a zero value to alternative 1, the relative values for alternative 2 and 3 are 100 and 30. That is, in the first decade alternative 2 provides considerable benefit to those counties reliant on Federal lands. Alternative 2 has a strong positive effect on socioeconomic resiliency for this group of 28 counties while the impact of alternative 1 was negative and alternative 3 is mixed. Ten counties may experience reduced socioeconomic resiliency under EIS alternatives 1 and 3 (Adams, Boundary, Clearwater, Idaho, and Owyhee, Idaho; Crook, Grant, Lake, and Harney, Oregon; and Ferry, Washington). The population of these ten counties makes up 2.5 percent of the Basin's population. Six counties may experience increased socioeconomic resiliency under these same alternatives (Blaine, Camas, Custer, Fremont, Valley and Lemhi, Idaho).

Caution needs to be applied when considering how these mid scale (say counties and groups of counties) impacts are extrapolated downward to finer scale sets of communities within counties. The diversity of communities within a county should be considered in the design of mitigation strategies. In this sense

alternative 3 has an advantage over the first two alternatives in that it prioritizes restoration activities near selected communities.

Uncertainty

These assessments of socioeconomic resiliency assume that the counties and BEA areas within the Basin will continue (in the next decade) to experience the economic and demographic patterns of the recent past. The future, however, may hold surprises that will result in different outcomes than assumed here. We know, for example, that the Basin has experienced periods of both inmigration and out-migration. In the 1980s, for example, the Basin experienced net out- migration as the United States coped with periods of severe recession, structural changes in the economy that diminished the role of resource based (including agriculture) sectors, and booms in other economic sectors and regions. Despite these risks, history has shown that humans are highly adaptive creatures in the Basin's ecosystems. Faced with risks, they will continue to adapt and demand ecosystem goods and services from Forest Service and BLM-administered lands in the Basin.

SUMMARY

In terms of socioeconomic development, the EIS alternatives would affect a small proportion of the human population in the Basin. As a percent of all jobs in the Basin, the impact would be 0.1 percent. Given these numbers, it is difficult to argue that Forest Service and BLM decisions broadly affect economic development in the Basin. Rather the effects are more limited and local in nature. For most people in the Basin, expansion in other economic sectors means that the impact of Forest Service and BLM decisions on their employment and income will be negligible. If the agencies wish to minimize their impact on economic resiliency, they can concentrate on their actions in the ten identified counties (Adams, Boundary, Clearwater, Idaho, and Owyhee, Idaho; Crook, Grant, Lake, and Harney, Oregon; and Ferry, Washington).

Twenty eight counties and the communities in those counties might experience measurable effects from Federal land management proposed in the alternatives. We often found that while alternative 2 produced greater outputs, higher socioeconomic benefits were associated with alternative 3. In the case of range reliant communities and counties, alternative 1 was often better. There are nine counties (2.7 percent of the population) where the actions of Federal agencies may negatively impact socioeconomic resiliency. These are counties where transition strategies might be first applied. We found that low income timber and range counties of concern were benefitted by alternative 3 in the first decade but ranching counties benefitted more from alternative 1 in the longer term.

In terms of minority communities and issues, the SDEIS focuses primarily on American Indians who account for about a fourth of the minorities in the Basin. This raises issues about the treatment of other minority communities and issues within the Basin. Concerns about environmental justice might conflict with policies that support road closures and modify access for subsistence use. They also raise concerns about the design of jobs-in-the-woods program targeted towards selected communities to the exclusion of others.

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LIST OF TABLES

Table EC-1--Employment in economic sectors of the United States, the Basin, and Interior Columbia River Basin RACPAC ,1996

Industry	United States	ICB average	Sierra Front-Northwestern Great Basin	Wyoming	Lewiston	Butte	Klamath	Deschutes	John Day-Snake
	Percent								
Agriculture services	1.24	**2.20**	**1.71**	**1.62**	.95	**1.67**	**2.37**	**1.81**	**2.76**
Mining	.58	**.59**	**5.37**	**1.45**	.42	.47	.10	.12	.04
Construction	5.33	**6.09**	**6.76**	**10.35**	**5.34**	**6.93**	**5.67**	**7.18**	3.98
Manufacturing	12.63	10.27	4.57	3.12	3.67	9.07	**13.68**	12.01	11.39
SIC 24[1]		2.00	.15	.01	.32	3.44	8.58	5.69	2.39
Transportation	4.73	3.95	4.24	3.53	3.52	**4.99**	4.01	3.08	4.03
Trade	21.48	**21.96**	20.40	**22.23**	19.20	**23.03**	**22.39**	**22.85**	19.69
FIRE[2]	7.41	5.32	3.69	**8.51**	7.15	5.93	4.70	5.58	4.05
Services	30.44	26.54	**33.58**	**36.26**	**33.78**	**30.46**	25.65	27.61	24.38
Government (all)	14.24	**15.46**	**14.33**	10.78	**24.04**	**14.34**	**15.17**	12.36	**17.62**
State & local government	10.88	**12.32**	**12.50**	8.37	**19.61**	**11.05**	**11.69**	9.88	**14.35**
Farm employment	1.93	**6.56**	**4.20**	**2.16**	**1.57**	**2.99**	**6.21**	**5.45**	**10.46**

Table EC-1--Employment in economic sectors of the United States, the Basin, and Interior Columbia River Basin RACPAC ,1996

Industry	Southeastern Oregon	Lower Snake river	Upper Snake river	Upper Columbia-Salmon-Clearwater -R4	Eastern Washington	Yakima	Eastern Washington Cascades	Upper Columbia-Salmon-Clearwater -R1
	Percent							
Agriculture services	**4.23**	**2.14**	**3.39**	**2.28**	**1.82**	**3.34**	**4.77**	**1.40**
Mining	.34	.23	.41	**2.01**	.15	.06	.19	**.74**
Construction	3.85	**7.63**	**6.55**	**7.92**	**5.46**	4.45	**5.57**	**7.38**
Manufacturing	9.99	**13.87**	8.75	7.79	9.53	8.68	6.59	12.22
SIC 24[1]	3.22	1.99	.31	2.84	.94	1.17	1.15	4.58
Transportation	4.10	4.31	4.37	3.36	3.70	3.41	2.78	3.83
Trade	**21.97**	21.39	**23.40**	20.16	**22.07**	**21.59**	**22.74**	**23.00**
FIRE[2]	3.35	6.30	4.20	5.41	6.21	4.35	5.44	5.62
Services	20.08	26.64	25.77	19.17	26.44	27.96	22.26	25.53
Government (all)	**16.98**	**13.90**	**14.42**	**20.53**	**16.97**	14.20	**14.93**	**17.07**
State & local government	**13.51**	10.02	**12.11**	**11.80**	**13.28**	**12.08**	**12.34**	**14.31**
Farm employment	**14.44**	**3.39**	**8.38**	**6.15**	**6.66**	**11.72**	**14.55**	**2.73**

Bold = values above the national average.

[1] SIC 24 = Standard Industrial Classification for lumber and wood products. Manufacturing number includes SIC 24.

[2] FIRE = Finance, insurance, and real estate.

Table EC-2–Annual average timber harvest volume[a] for the Interior Columbia Basin Ecosystem Management Project Management Region[b], by RACPAC

Area		Current	First decade			100 year period		
			Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
			Million board feet					
2	Sierra Front Northwestern	0.1	0.1	0.0	0.0	0.0	0.0	0.0
3	Wyoming	0	0	0.1	0.1	0.0	0.1	0.1
4	Lewiston	2.0	2.0	2.2	2.2	0.9	0.9	0.9
5	Butte	159.4	159.0	172.1	170.0	82.0	76.8	71.9
6	Klamath	42.0	41.4	51.0	51.0	34.2	40.8	36.5
7	Deschutes	56.6	55.9	57.0	59.0	39.8	36.7	32.0
8	John Day-Snake	123.5	122.0	190.1	178.5	86.4	109.0	96.8
9	Southeastern Oregon	74.1	73.4	98.7	89.5	66.6	72.0	61.5
10	Lower Snake River	41.9	41.9	59.0	64.1	25.0	31.5	27.5
11	Upper Snake River	11.9	11.9	14.2	14.0	8.1	9.8	9.1
12	Upper Columbia-Salmon Clearwater R-4	116.0	116.0	145.0	140.0	72.2	74.3	71.2
13	Eastern Washington	49.0	48.6	47.7	51.6	25.3	23.8	24.8
14	Yakima	0.4	0.4	1.0	1.0	0.6	0.8	0.9
15	Eastern Washington Cascades	3.0	3.0	4.1	5.2	3.5	4.4	4.3
16	Upper Columbia-Salmon Clearwater R-1	138.8	138.4	144.1	154.6	76.2	64.8	67.6
	Total FS/BLM	818.7	814.0	986.3	980.7	520.9	545.9	505.3
	Other Federal	58.9	58.9	58.9	58.9	53.5	53.5	53.5
	Nonfederal	2,482.1	2,482.2	2,482.2	2,482.2	2,227.7	2,227.7	2,227.7
	Total Basin	3,359.6	3,355.1	3,527.5	3,521.9	2,802.1	2,827.1	2,786.5

[a] Landscape variable is VOL.
[b] Numbers limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-3--Annual average authorized animal unit month[a] activity for the Interior Columbia Basin Ecosystem Management Project Management Region[b], by RACPAC

Area	Current	First decade			100 year period		
		Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
		Animal unit months					
2 Sierra Front Northwestern	17,651	17,704	15,648	15,612	14,689	15,624	15,592
3 Wyoming	478	470	471	471	449	471	471
4 Lewiston	1,088	1,073	1,075	1,057	1,056	1,075	1,053
5 Butte	37,101	36,906	33,645	33,199	35,394	33,650	33,194
6 Klamath	42,760	42,823	39,308	39,674	36,549	39,287	39,685
7 Deschutes	109,684	113,588	95,251	91,258	92,642	95,359	91,378
8 John Day-Snake	349,179	347,440	324,108	311,498	295,508	324,178	311,634
9 Southeastern Oregon	765,861	765,509	697,790	681,066	607,625	698,024	680,899
10 Lower Snake River	574,861	581,006	546,539	545,326	479,649	545,303	544,617
11 Upper Snake River	751,143	741,148	609,802	616,210	626,499	609,827	616,140
12 Upper Columbia-Salmon Clearwater R-4	366,497	365,796	337,159	334,407	338,117	336,822	334,100
13 Eastern Washington	64,847	65,145	63,858	61,821	59,559	63,990	61,955
14 Yakima	3,770	3,849	3,736	3,762	2,997	3,762	3,788
15 Eastern Washington Cascades	12,359	12,382	12,295	12,310	10,964	12,314	12,332
16 Upper Columbia-Salmon Clearwater R-1	34,127	33,964	33,733	33,740	32,618	33,733	33,740
Total Federal	3,131,406	3,128,803	2,814,418	2,781,411	2,634,316	2,813,421	2,780,578
Other Federal	1,509,632	1,509,632	1,509,632	1,509,632	1,293,237	1,293,237	1,293,237
Nonfederal	41,131,694	41,131,694	41,131,694	41,131,694	39,138,078	39,138,078	39,138,078
Total Basin	45,772,731	45,770,129	45,455,744	45,422,737	43,065,630	43,244,735	43,211,893

[a] Landscape variable is AUM.
[b] Numbers limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-4–Annual average acres of forest/woodland planting and precommerical thinning[a] for the Interior Columbia Basin Ecosystem Management Project Managment Region[b], by RACPAC

Area		Current	First decade			100 year period		
			Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
		Acres						
2	Sierra Front Northwestern	11	11	12	13	5	16	17
3	Wyoming	0	0	10	6	5	10	5
4	Lewiston	363	362	476	428	313	331	330
5	Butte	25,991	25,928	33,224	32,958	18,121	18,713	17,823
6	Klamath	11,453	11,279	14,351	14,257	9,514	11,311	10,190
7	Deschutes	12,723	12,566	15,353	15,048	9,757	10,246	8,852
8	John Day-Snake	21,721	21,437	38,527	35,339	15,640	23,253	20,151
9	Southeastern Oregon	17,782	17,614	26,318	23,091	15,347	19,254	16,340
10	Lower Snake River	6,138	6,140	10,193	10,202	4,121	6,275	5,301
11	Upper Snake River	2,135	2,133	3,651	3,520	1,612	3,526	4,078
12	Upper Columbia-Salmon Clearwater R-4	18,956	18,966	24,240	23,747	12,900	14,346	13,963
13	Eastern Washington	7,397	7,341	8,626	9,218	5,082	5,098	5,405
14	Yakima	71	71	139	135	91	117	128
15	Eastern Washington Cascades	580	576	1,090	1,237	619	878	805
16	Upper Columbia-Salmon Clearwater R-1	17,352	17,300	22,454	22,986	11,878	11,755	11,960
	Total Federal	142,675	141,726	198,664	192,186	105,005	125,129	115,348
	Other Federal	11,095	11,096	11,096	11,096	10,825	10,825	10,825
	Nonfederal	529,975	530,077	530,077	530,077	471,674	471,674	471,674
	Total Basin	683,745	682,900	739,838	733,359	587,505	607,628	597,847

[a] Landscape variable is FMA which is timber harvest area (HRV) and precommerical thinning (THN).
[b] Numbers limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-5A–Annual average acres of range livestock allotment maintenance/restoration[a] for the Interior Columbia Basin Ecosystem Management Project Management Region[b], by RACPAC

	Area	Current	First decade			100 year period		
			Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
		Acres						
2	Sierra Front Northwestern	9,182	9,212	9,349	9,296	8,965	9,356	9,304
3	Wyoming	59	58	82	82	59	82	82
4	Lewiston	2,053	2,037	2,124	2,091	2,053	2,124	2,091
5	Butte	83,633	83,297	113,017	95,467	83,643	112,947	95,467
6	Klamath	84,466	84,432	66,150	66,522	84,564	66,165	66,537
7	Deschutes	164,997	167,129	144,746	135,910	165,286	144,890	136,035
8	John Day-Snake	306,576	305,015	377,433	349,602	306,683	378,040	350,046
9	Southeastern Oregon	1,117,178	1,115,240	1,144,154	1,092,887	1,118,597	1,141,142	1,091,264
10	Lower Snake River	440,885	445,626	507,825	484,595	442,991	506,571	483,654
11	Upper Snake River	525,405	516,927	539,910	550,404	522,838	536,643	546,697
12	Upper Columbia-Salmon Clearwater R-4	279,365	278,568	315,572	299,602	279,405	315,040	299,197
13	Eastern Washington	32,932	33,001	54,240	47,947	32,934	54,240	47,947
14	Yakima	912	931	1,033	1,025	937	969	961
15	Eastern Washington Cascades	9,180	9,161	11,511	9,746	9,180	11,511	9,746
16	Upper Columbia-Salmon Clearwater R-1	32,890	32,743	61,475	47,515	32,890	61,495	47,498
	Total Federal	3,089,715	3,083,378	3,348,622	3,192,691	3,091,024	3,341,214	3,186,525
	Other Federal	100,335	100,335	100,335	100,335	99,621	99,621	99,621
	Nonfederal	1,510,083	1,510,083	1,510,083	1,510,083	1,517,971	1,517,971	1,517,971
	Total Basin	4,700,133	4,693,796	4,959,040	4,803,109	4,708,616	4,958,805	4,804,116

[a] Landscape variable is RST.
[b] Numbers (acres treated) limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-5B–Annual average cost of range livestock allotment maintenance/restoration for the Interior Columbia Basin Ecosystem Management Project Management Region[a], by RACPAC

Area			First decade			100 year period		
		Current	Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
					Dollars			
2	Sierra Front Northwestern	918	921	1,402	1,394	896	1,403	1,396
3	Wyoming	6	6	33	33	6	33	33
4	Lewiston	205	204	319	314	205	319	314
5	Butte	8,363	8,330	24,268	21,893	8,364	24,255	21,891
6	Klamath	8,447	8,443	9,923	19,149	8,456	9,925	19,151
7	Deschutes	16,500	16,713	35,301	32,654	16,529	35,365	32,680
8	John Day-Snake	30,658	30,502	116,321	107,637	30,668	116,539	107,810
9	Southeastern Oregon	111,718	111,524	219,602	214,453	111,860	218,484	213,784
10	Lower Snake River	44,089	44,563	111,158	103,777	44,299	110,561	103,367
11	Upper Snake River	52,541	51,693	125,465	142,110	52,284	124,147	140,554
12	Upper Columbia-Salmon Clearwater R-4	27,937	27,857	85,057	85,602	27,940	84,858	85,440
13	Eastern Washington	3,293	3,300	13,983	12,469	3,293	13,983	12,469
14	Yakima	91	93	200	199	94	174	173
15	Eastern Washington Cascades	918	916	1,727	1,462	918	1,727	1,462
16	Upper Columbia-Salmon Clearwater R-1	3,289	3,274	17,105	14,137	3,289	17,113	14,130
	Total Federal	308,971	308,338	761,863	757,284	309,102	758,887	754,654
	Other Federal	10,033	10,033	18,570	20,587	9,962	18,479	20,502
	Nonfederal	151,008	151,008	336,831	355,762	151,797	338,934	357,887
	Total Basin	470,013	469,380	1,117,264	1,133,633	470,862	1,116,299	1,133,043

[a] Numbers limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-6–Annual average acres of prescribed fire and fuel mangement[a] for the Interior Columbia Basin Ecosystem Management Project Management Region[b], by RACPAC

	Area	Current	First decade			100 year period		
			Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
		Acres						
2	Sierra Front Northwestern	29	29	21	19	16	20	10
3	Wyoming	0	0	45	44	19	92	92
4	Lewiston	290	290	1,408	897	256	833	512
5	Butte	23,978	24,123	210,402	200,046	19,149	176,394	163,977
6	Klamath	12,933	13,071	43,267	37,228	9,858	56,431	47,134
7	Deschutes	23,988	24,313	79,382	80,248	18,091	75,513	77,590
8	John Day-Snake	44,848	46,408	484,751	366,501	45,483	478,952	370,533
9	Southeastern Oregon	33,219	33,949	312,963	182,095	31,574	382,654	210,155
10	Lower Snake River	2,550	2,586	26,104	10,748	2,771	23,568	11,208
11	Upper Snake River	3,510	3,523	17,341	18,611	2,688	12,679	13,967
12	Upper Columbia-Salmon Clearwater R-4	17,460	17,711	98,717	84,836	13,216	88,585	68,350
13	Eastern Washington	2,603	2,612	33,523	26,467	2,815	26,004	20,181
14	Yakima	6	6	64	48	5	69	52
15	Eastern Washington Cascades	757	761	14,280	10,832	719	24,222	17,402
16	Upper Columbia-Salmon Clearwater R-1	11,692	11,730	134,152	91,381	11,642	108,367	73,933
	Total Federal	177,862	181,112	1,456,421	1,110,002	158,303	1,454,381	1,075,095
	Other Federal	1,104	1,111	1,111	1,111	633	633	633
	Nonfederal	18,103	18,218	18,218	18,218	13,271	13,271	13,271
	Total Basin	197,069	200,442	1,475,750	1,129,331	172,207	1,468,284	1,088,998

[a] Landscape variable is PRS.
[b] Numbers limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-7–Employment (dependent on FS/BLM lands) in wood products industry for the Interior Columbia Basin Ecosystem Management Project Management Region, by RACPAC

Area		Current	First decade		
			Alternative 1	Alternative 2	Alternative 3
		Number of jobs[a]			
2	Sierra Front Northwestern	1	1	0	0
3	Wyoming	0	0	1	1
4	Lewiston	15	15	17	17
5	Butte	1,236	1,232	1,334	1,317
6	Klamath	325	321	395	395
7	Deschutes	439	433	442	457
8	John Day-Snake	957	945	1,473	1,383
9	Southeastern Oregon	575	569	765	694
10	Lower Snake River	325	325	457	497
11	Upper Snake River	92	92	110	109
12	Upper Columbia-Salmon Clearwater R-4	899	899	1,124	1,085
13	Eastern Washington	380	377	370	400
14	Yakima	3	3	8	8
15	Eastern Washington Cascades	24	23	32	40
16	Upper Columbia-Salmon Clearwater R-1	1,075	1,072	1,117	1,199
	Total	6,345	6,308	7,644	7,601

[a] Numbers (logging and manufacturing) limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-8--Range (dependent on FS/BLM lands) employment for the Interior Columbia Basin Ecosystem Management Project Management Region, by RACPAC

Area		Current	First decade		
			Alternative 1	Alternative 2	Alternative 3
		Number of jobs[a]			
2	Sierra Front Northwestern	6	6	6	6
3	Wyoming	0	0	0	0
4	Lewiston	0	0	0	0
5	Butte	13	13	12	12
6	Klamath	15	15	14	14
7	Deschutes	39	41	34	33
8	John-Day Snake	126	125	117	112
9	Southeastern Oregon	276	276	251	245
10	Lower Snake River	207	209	197	196
11	Upper Snake River	270	267	220	222
12	Upper Columbia-Salmon Clearwater R-4	132	132	121	120
13	Eastern Washington	23	23	23	22
14	Yakima	1	1	1	1
15	Eastern Washington Cascades	4	4	4	4
16	Upper Columbia-Salmon Clearwater R-4	12	12	12	12
	Total	1,127	1,126	1,013	1,001

[a] Numbers (ranching) limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-9--Employment (dependent on FS/BLM lands) in forestry and range services, for the Interior Columbia Basin Ecosystem Management Project Management Region, by RACPAC

Area		Current	First decade		
			Alternative 1	Alternative 2	Alternative 3
		Number of jobs[a]			
2	Sierra Front Northwestern	0	0	0	0
3	Wyoming	0	0	0	0
4	Lewiston	1	1	1	1
5	Butte	52	52	67	66
6	Klamath	23	23	29	29
7	Deschutes	26	26	32	31
8	John-Day Snake	44	44	80	73
9	Southeastern Oregon	38	38	58	51
10	Lower Snake River	13	13	23	23
11	Upper Snake River	5	5	10	10
12	Upper Columbia-Salmon Clearwater R-4	39	39	50	49
13	Eastern Washington	15	15	18	19
14	Yakima	0	0	0	0
15	Eastern Washington Cascades	1	1	2	3
16	Upper Columbia-Salmon Clearwater R-4	35	35	45	46
	Total	293	291	415	402

[a] Numbers limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-10--Employment (dependent on FS/BLM lands) in prescribed fire for the Interior Columbia Basin Ecosystem Management Project Management Region, by RACPAC

Area		Current	First decade		
			Alternative 1	Alternative 2	Alternative 3
		Number of jobs[a]			
2	Sierra Front Northwestern	0	0	0	0
3	Wyoming	0	0	0	0
4	Lewiston	1	1	3	2
5	Butte	48	48	421	400
6	Klamath	26	26	87	74
7	Deschutes	48	49	159	160
8	John-Day Snake	90	93	970	733
9	Southeastern Oregon	66	68	626	364
10	Lower Snake River	5	5	52	21
11	Upper Snake River	7	7	35	37
12	Upper Columbia-Salmon Clearwater R-4	35	35	197	170
13	Eastern Washington	5	5	67	53
14	Yakima	0	0	0	0
15	Eastern Washington Cascades	2	2	29	22
16	Upper Columbia-Salmon Clearwater R-4	23	23	268	183
	Total	356	362	2,913	2,220

[a] Numbers limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-11--Total employment (dependent on FS/BLM lands) in wood products, range, and forestry and range services, for the Interior Columbia Basin Ecosystem Management Project Management Region, by RACPAC

Area		Current	First decade		
			Alternative 1	Alternative 2	Alternative 3
		Number of jobs[a]			
2	Sierra Front Northwestern	7	7	6	6
3	Wyoming	0	0	1	1
4	Lewiston	17	17	21	20
5	Butte	1,349	1,346	1,833	1,796
6	Klamath	390	385	525	513
7	Deschutes	552	548	666	681
8	John-Day Snake	1,217	1,207	2,639	2,301
9	Southeastern Oregon	955	950	1,700	1,355
10	Lower Snake River	550	552	729	738
11	Upper Snake River	375	372	374	378
12	Upper Columbia-Salmon Clearwater R-4	1,104	1,105	1,493	1,424
13	Eastern Washington	423	420	477	494
14	Yakima	4	4	10	9
15	Eastern Washington Cascades	31	31	67	69
16	Upper Columbia-Salmon Clearwater R-4	1,146	1,143	1,443	1,440
	Total	8,120	8,087	11,985	11,224

[a] Numbers limited to Interior Columbia Basin Ecosystem Management Project decision space.

Table EC-12--Wood products counties of concern

County	State	First decade			100 year period		
		Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
Adams	ID	1	3	2	2	3	1
Benewah	ID	2	1	3	3	1	2
Bonner	ID	2	1	3	3	2	1
Boundary	ID	2	1	3	3	2	1
Clearwater	ID	2	1	3	3	1	2
Gem	ID	1	2	3	1	3	2
Idaho	ID	1	2	3	2	3	1
Kootenai	ID	2	1	3	3	2	1
Lewis	ID	1	2	3	1	2	3
Madison	ID	1	3	2	1	3	2
Payette	ID	1	2	3	1	3	2
Shoshone	ID	2	1	3	3	2	1
Teton	ID	1	3	2	1	3	2
Twin Falls	ID	2	1	3	3	2	1
Granite	MT	1	2	3	2	3	1
Lincoln	MT	1	3	2	3	2	1
Mineral	MT	1	3	2	2	3	1
Sanders	MT	1	3	2	3	2	1

Table EC-12--Wood products counties of concern (continued)

		First decade			100 year period		
County	State	Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
Crook	OR	1	3	2	1	3	2
Grant	OR	1	3	2	3	2	1
Harney	OR	1	3	2	3	2	1
Jefferson	OR	1	3	2	2	3	1
Klamath	OR	1	3	2	2	3	1
Lake	OR	1	3	2	1	3	2
Union	OR	1	3	2	1	3	2
Wallowa	OR	1	3	2	1	3	2
Wheeler	OR	1	3	2	1	3	2
Ferry	WA	2	1	3	3	1	2
Kittitas	WA	1	2	3	1	3	2
Okanogan	WA	1	2	3	1	3	2
Pend Orielle	WA	2	1	3	3	1	2
Stevens	WA	2	1	3	3	1	2
Yakima	WA	1	2	3	1	3	2
Total ranking score		43	71	84	67	79	52

Table EC-13--Range counties of concern

		First decade			100 year period		
County	State	Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
Adams	ID	3	2	1	2	3	1
Camas	ID	3	1	2	1	2	3
Custer	ID	3	1	2	3	1	2
Lemhi	ID	3	1	2	1	2	3
Owyhee	ID	3	1	2	1	2	3
Valley	ID	3	2	1	2	3	1
Grant	OR	3	2	1	3	2	1
Harney	OR	3	2	1	1	3	2
Lake	OR	3	1	2	1	2	3
Wallowa	OR	3	2	1	1	3	2
Ferry	WA	3	2	1	2	3	1
Total ranking score		33	17	16	19	26	21

The alternatives are ranked from 1 to 3 with 3 being the highest.

Table EC-14--Isolated wood products community counties

County	State	First decade			100 year period		
		Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
Idaho	ID	1	2	3	2	3	1
Lincoln	MT	1	3	2	3	2	1
Grant	OR	1	3	2	3	2	1
Wallowa	OR	1	3	2	1	3	2
Okanogan	WA	1	2	3	1	3	2
Pend Orielle	WA	2	1	3	3	1	2
Total ranking score		7	14	15	13	14	9

The alternatives are ranked from 1 to 3 with 3 being the highest

Table EC-15--Isolated agricultural communities counties

		First decade			100 year period		
County	State	Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
Idaho	ID	3	2	1	2	3	1
Lemhi	ID	3	1	2	1	2	3
Valley	ID	3	2	1	2	3	1
Grant	OR	3	2	1	3	2	1
Total ranking score		9	5	4	6	7	5

The alternatives are ranked from 1 to 3 with 3 being the highest.

Table EC-16--Indian wood products community counties of concern

		First decade			100 year period		
County	State	Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
Benewah	ID	2	1	3	3	1	2
Boundary	ID	2	1	3	3	2	1
Clearwater	ID	2	1	3	3	1	2
Idaho	ID	1	2	3	2	3	1
Lewis	ID	1	2	3	1	2	3
Nez Perce	ID	1	2	3	1	2	3
Lake	MT	3	1	2	3	2	1
Harney	OR	1	3	2	3	2	1
Jefferson	OR	1	3	2	2	3	1
Ferry	WA	2	1	3	3	1	2
Okanogan	WA	1	2	3	1	3	2
Pend Orielle	WA	2	1	3	3	1	2
Stevens	WA	2	1	3	3	1	2
Yakima	WA	1	2	3	1	3	2
Total ranking score		22	23	39	32	27	25

The alternatives are ranked from 1 to 3 with 3 being the highest.

Table EC-17--Indian agriculture community counties of concern

		First decade			100 year period		
County	State	Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
Benewah	ID	2	1	3	1	2	3
Boundary	ID	3	2	1	1	3	2
Idaho	ID	3	2	1	2	3	1
Kootenai	ID	2	1	2	1	2	3
Lewis	ID	2	1	2	1	2	3
Nez Perce	ID	2	1	2	1	2	3
Power	ID	3	1	2	3	1	2
Lake	MT	3	2	1	2	3	1
Sanders	MT	3	2	1	3	2	1
Harney	OR	3	2	1	1	3	2
Umatilla	OR	3	2	1	1	3	2
Yakima	WA	3	2	1	1	3	2
Total ranking score		32	19	18	18	29	25

The alternatives are ranked from 1 to 3 with 3 being the highest.

Table EC-18--Low income environmental justice counties of concern

		First decade			100 year period		
County	State	Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
Timber:							
Shoshone	ID	2	1	3	3	2	1
Mineral	MT	1	3	2	2	3	1
Sanders	MT	1	3	2	3	2	1
Ferry	WA	2	1	3	3	1	2
Okanogan	WA	1	2	3	1	3	2
Pend Orielle	WA	2	1	3	3	1	2
Yakima	WA	1	2	3	1	3	2
Total timber ranking		10	13	19	16	15	11
Range:							
Ferry	WA	3	2	1	2	3	1

The alternatives are ranked from 1 to 3 with 3 being the highest.

Table EC-19--Socioeconomic resiliency trends in counties of concern, by alternative

		First decade		
County	State	Alternative	Alternative	Alternative
Adams	ID	-	0	-
Benewah	ID	0	0	0
Blaine	ID	+	+	+
Boundary	ID	-	+	-
Camas	ID	+	+	+
Clearwater	ID	-	+	-
Custer	ID	+	+	+
Fremont	ID	+	+	+
Idaho	ID	-	+	-
Lemhi	ID	+	+	+
Lewis	ID	-	+	0
Owyhee	ID	-	-	-
Shoshone	ID	-	+	0
Teton	ID	0	+	+
Valley	ID	+	+	+
Granite	MT	-	+	0
Lincoln	MT	-	+	0
Mineral	MT	-	+	0
Sanders	MT	-	+	0
Crook	OR	-	+	-
Grant	OR	-	0	-
Harney	OR	-	0	-
Lake	OR	-	0	-
Wallowa	OR	-	0	0
Wheeler	OR	-	+	0
Ferry	WA	-	0	0
Okanogan	WA	0	0	0
Pend Oreille	WA	-	+	0

Increase = +, decrease = -, no change = 0

LIST OF FIGURES